

LIST OF CLAIMS

1. A process to remove N-contaminants from a syngas stream comprising the steps of:
 - (a) introducing a syngas stream and a water stream into a first absorber;
 - (b) recovering a first-washed syngas stream overhead from the first absorber;
 - (c) introducing the first-washed syngas stream and a Fischer-Tropsch produced water stream into a second absorber; and
 - (d) recovering a second-washed syngas stream overhead from the second absorber.
2. The process of claim 1 further comprising the step of:
 - (e) using the second-washed syngas stream as a feed for a first stage Fischer-Tropsch reactor.
3. The process of claim 2 wherein the first stage Fischer-Tropsch reactor contains a catalyst comprising cobalt.
4. The process of claim 1 wherein the syngas is generated in the presence of air or oxygen-enriched air.
5. A Fischer-Tropsch process comprising the steps of:
 - (a) introducing a feed syngas stream into a first-stage Fischer-Tropsch reactor and recovering a first overhead stream comprised of Fischer-Tropsch produced water, hydrocarbon product and unreacted syngas from the first stage Fischer-Tropsch reactor;
 - (b) separating the unreacted syngas component from the first overhead stream and introducing the unreacted syngas component into a second stage Fischer-Tropsch reactor;
 - (c) recovering a second overhead stream comprised of Fischer-Tropsch produced water and hydrocarbon product from the second stage Fischer-Tropsch reactor;
 - (d) separating the Fischer-Tropsch produced water from the second overhead stream; and
 - (e) mixing the Fischer-Tropsch produced water separated in step (d) with the first overhead stream.
6. The process of claim 5 wherein the mixing step (e) occurs prior to the separation step (b).
7. The process of claim 5 wherein the mixing step (e) occurs simultaneously with the separation step (b).
8. The process of claim 5 further comprising the steps of:
 - (i) separating the Fischer-Tropsch produced water from the first overhead stream;

(ii) feeding the Fischer-Tropsch produced water separated in step (i) and a raw syngas stream into a first absorber; and

(iii) recovering a washed syngas stream from the first absorber.

9. The process of claim 8 wherein the washed syngas stream from the first absorber is used as the feed syngas stream in step (a).

10. The process of claim 5 wherein the first and second stage Fischer-Tropsch reactors contain a catalyst comprising cobalt.

11. The process of claim 5 wherein the syngas stream is produced in the presence of air or oxygen-enriched air.

12. In a Fischer-Tropsch process wherein a synthesis gas is catalytically converted into a Fischer-Tropsch reaction product mixture and wherein two or more Fischer-Tropsch reactors are used in the process, the process improvement comprising:

(a) separating Fischer-Tropsch produced water from the Fischer-Tropsch reaction product mixture of a first Fischer-Tropsch reactor; and

(b) mixing the separated Fischer-Tropsch water from step (a) with the feed to a second Fischer-Tropsch reactor wherein the second Fischer-Tropsch reactor is the same as the first Fischer-Tropsch reactor or is located upstream of the first Fischer-Tropsch reactor.

13. The process improvement of claim 12 wherein the synthesis gas is produced in the presence of air or oxygen-enriched air.

14. The process improvement of claim 12 wherein the Fischer-Tropsch reactors contain a catalyst comprising cobalt.

15. The process of claim 1 further comprising the steps of:

(f) recovering a first nitrogen-enriched aqueous stream from the first absorber; and

(g) recovering a second nitrogen-enriched aqueous stream from the second absorber.

16. The process of claim 16 further comprising the step of mixing the first and second nitrogen-enriched streams together.

17. The process of claim 15 further comprising the step of treating at least one of the first and second nitrogen-enriched streams by removing all or part of the nitrogen contaminants in such stream(s).

18. The process of claim 17 further comprising the step of recycling the treated aqueous stream(s).

19. The process of claim 1 wherein the temperature of at least one of the water stream introduced into the first absorber and the Fischer-Tropsch produced water stream introduced into the second absorber are temperature controlled.